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ABSTRACT

Managers must evaluate the performance, promotability and potential of workers with very different personal characteristics such as age, sex, or race. The research literature indicates that these personal characteristics affect decisions. Furthermore, these characteristics appear to be more salient and to affect decisions in some situations more than in others. Two possible explanations for this phenomenon closely parallel Wernimont and Campbell's (1968) distinction between signs and samples as indicators of job performance. First, personal characteristics may act as a sign to guide a manager's expectations about a worker's level of performance. On the other hand, person constructs may become salient by being either highly consistent or inconsistent with the sample of person characteristics or situations. The sign approach suggests that researchers should study the supervisor's beliefs about relationships between traits and behaviors, as in Implicit Personality Theory research. The sample approach suggests that the relationship between traits and behaviors is not context-free and the situation and supervisor's perception of the situation should be studied. Both views must be considered in research on the interaction between persons and jobs. Several tables and figures are appended. (Author/ABL)

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Personal and Situational Characteristics in Age Bias: Signs or Samples?

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Running Head: Signs or Samples

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Abstract

Manager must evaluate the performance, promotability and potential of workers with very different personal characteristics such as age, sex, or race. The research literature indicates that these personal characteristics affect decisions. Futhermore, these characteristics appear to be more salient (and have effects on decisions) in some situations more than in others. Two possible explanations for this phenomenon which closely parallel Wernimont and Campbell's (1968) distinction between signs and samples as indicators of job performance are discussed in the present paper. First, personal characteristics may act as a sign to guide managers' expectations about a worker's level of performance. On the other hand, person constructs may become salient by being either highly consistent or inconsistent with the sample of person characteristics or situations. The present paper suggests that both views must be considered in research on the interactions between persons and jobs.

Personal Characteristics and Personnel Decisions: Signs or Samples?

In the work setting, supervisors are frequently called upon to evaluate employee performance and to make decisions regarding promotions, raises, awards, transfers, and the like. There is considerable evidence that personal characteristics such as sex, race, and age are related to personnel decisions, and it is widely believed that the correlation between personal characteristics and personnel decisions is an indication of unfair bias against females, minorities, and older workers (Arvey, 1979). During the last two decades the issue of bias in personnel decisions has been the focus of considerable research by Industrial and Organizational psychologists. For the most part, this research has been aimed at uncovering and cataloguing specific biases, rather than at understanding the mechanisms which might underlie these biases (exceptions include Terborg & Ilgen (1975) and Heilman (1981)). As a result, I/O psychologists know a great deal about what sort of biases exist, but know comparatively little about the way in which personal characteristics such as race, sex, or age actually affect supervisors' decisions or their perceptions of different workers' levels of job performances.

Close examination of the research on bias in personnel decisions suggests two fundamentally different ways in which personal characteristics are assumed to affect supervisor's perceptions of workers: (a) personal characteristics may be viewed as a direct indicator of poor performance, or

(b) the personal characteristic may become salient because they are not representative of the personal characteristics usually encountered in acceptable or superior workers. These two different explanations for the effects of personal charactertistics on personnel decisions parallel Wernimont and Campbell's (1965) definition of signs and samples. In this paper, we will describe the two different approaches to explaining bias in personnel decisions and will note the relation of each one of these approaches to Kelly's (1955) Personal Construct Theory. Results of a recent study on age bias in promotion and awards decisions will be used to illustrate methods of combining both sign and sample approaches to further our understanding of the relationship between personal characteristics and personnel decisions.

A Framework For Studying Personnel Decisions

Industrial and Organizational psychologists have, for the most part, addressed individual biases in isolation. Thus, sex bias is typically viewed as a different phenomenon than bias against minorities, or bias in favor of attractive applicants. The intrusions of personal characteristics upon personnel decisions might be more profitable viewed as part of the more general process by which the supervisor forms and organizes his or her perceptions of each individual worker. The fact that demographic characteristics such as age, race, or sex are correlated with performance judgments and personnel decisions suggests that these personal characteristics are somehow linked, in the mind of the supervisor, with a

variety of constructs such as "effective worker", or "candidate for promotion". The sign vs. sample approaches suggest that two different types of links are implied by the existing research on personnel decision biases: (a) direct links (signs), and (b) indirect links which depend upon the context in which a worker is evaluated (samples). The sign vs. sample approaches, in turn, suggest different research designs. Research in which personal characteristics are viewed as signs is concerned principally with the main effect of worker characteristics upon personnel decisions. Research which follows the sample approach implies an interaction betweeh worker characteristics and contextual variables. A simple descriptive model of the role of personal variables, acting as both signs and samples, in personnel decisions is presented in Figure 1. The implications of this

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Insert Figure 1 about here

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model are discussed below.

Personal Characteristics as a Sign of Performance

The general model underlying much of the research on personnel decision biases is one in which a variable such as age, or race, or sex is correlated with some dependent variable, such as performance ratings or promotion recommendations. These correlations are often explained in terms of stereotypes (Cecil, Paul & Olin, 1973; O'Leary, 1974; Schein, 1973, 1978;

Terborg, 1977). For example, female workers are generally viewed as more nurturant, gentle, timid, reserved, passive, and indecisive than males (Broverman, Vogel, Broverman, Clarkson, & Rosenkrantz, 1977). These sex-role stereotypes, in turn, are thought to lead to less favorable promotion, development, and hiring recommendations for females than for males (Cohen & Bunker, 1975), less favorable evaluations of female than of male candidates for managerial positions (Rosen & Jerdee, 1974), and less favorable evaluations of the supervisory behavior of females than of males (Bartol & Butterfield, 1976; Rosen & Jerdee, 1973).

The sign aproach suggests that personal characteristics lead directly to a number of trait judgments about each worker (e.g, female=passive, male=aggressive). Research in areas such as Implicit Personality Theory, trait attribution, or impression formation (Bruner & Tanguiri, 1954; Passini & Norman, 1966; Wegner, 1978) is thus clearly relevant to this approach to explaining personnel decision biases. These trait judgments, in turn, lead to inferences about the worker's ability to perform successfully in a specific job.

For the most part, research on personal characteristics as signs of performance has been context-free. In other words, the trait judgments which have been studied in research of this type have been sufficiently broad (e.g., active-passive, honest-dishonest, intelligent-unintelligent) to suggest that females, or minorities, or older workers are viewed as less acceptable for <u>all</u> types of work than are young, white males. The tendency to concentrate upon very broad traits has obscured the fact that <u>two</u>

inferences must be made in connecting personal characteristics with personnel decisions. The first inference is from personal characteristics to traits. The second inference concerns the abilities or traits which are necessary for success in a specific context. Recent attention to specific contextual variables suggests a second way in which personal characteristics may intrude upon personnel decisions. Rather than leading directly and automatically to very general trait inferences, personal characteristics may interact with contextual variables, and may activate different sets of trait inferences in different contexts. The method of explaining the influence of personal characteristics upon personnel decisions which examines the interaction of personal and contextual variables is referred to as a sample approach.

Personal Characteristics as a Sample of Performance

In an attempt to better understand biased decision-making, Industrial and Organizational psychologists have begun to examine personnel decisions within specific contexts. Important decisions appear to be based on more than one set of characteristics. There may be, in fact, situational variables that affect the extent to which personal-characteristics-bias will influence decisions. In some settings, the context of the decision may serve to enhance the influence of such variables as age, or gender of the individual. In other situations, these contextual factors may reduce or limit the biasing impact of such factors on decisions. For example, Cohen and Bunker (1980) found that females were evaluated as more hireable

for a position usually held by a woman (editorial assistant) than for a position usually held by a man (personnel technician). The opposite was true for men. Cleveland and Landy (1983) found that older workers may not be negatively perceived in all situations or for all jobs, but only in those positions that are stereotypically a younger person job. In both studies the personal characteristics of the individual were incongruent with the characteristics of the majority or typical incumbent. In other words, the person being evaluated was not representative in some important way, of the sample of persons usually encountered in this context. More important, changing the context may lead to substantial changes in the links between personal chartacteristics and personnel decisions (Cohen & Bunker, 1980; Heilman, 1981).

The process which appears to be involved in the sample approach is one where the perceiver determines whether the individual (male, female, young, old) "fits" into, or is consistent with, the characteristics of the situation (Heilman, 1981). The sex or age of the person no longer acts as a sign indicating a specific level of performance or specific set of traits or abilities, but is an element which is consistent or inconsistent with the typical context of the decisions. Thus, there is no assumption of a specific universal relationship between age, race, or sex and the ability to perform the job. Rather, this approach to studying and explaining personnel decision biases concentrates on the direct relationship between the person and situation characteristics. Although traits and abilities need not be inferred in this approach, the inference may be made that the

better the match, the more likely the individual possesses the necessary traits and abilities to perform in that situation. Here, we are primarily concerned with the interaction of person and context variables--not the simple main effects of person variables upon decisions.

There are two principal differences between the sign and the sample approaches. First, in the sample approach, personal constructs (e.g., old, male) are activated only when they are inconsistent with the characteristics of persons usually encountered in that context. Second, the inference is not one which proceeds directly from a specific characteristic to a specific set of traits. Rather, any personal characteristic which is inconsistent, or which does not fit the supvisor's stereotype of a particular context may affect decisions. It may be that any important discrepancy between the person being evaluated and the typical or model worker in a particular context leads to the same inference; the person who does not fit a particular context may invariably be seen as less likely to succeed than another who does fit.

The sample approach allows for considerable flexibility in defining and operationalizing the person variables to be studied. The sign approach has been traditionally limited to a set of variables about which people hold fairly stable and general stereotypes (e.g., sex, race). The sample approach allows one to study person variables which may not lead to universal trait attributions, but may in some contexts have a powerful effect upon decisions. An example of the flexibility of the sample approach is presented in a study by Cleveland and Landy (1983).

An Empirical Example of the Sign and Sample Approaches

A recent paper by Cleveland and Landy (1983) employed both the sign and sample approaches to study the effect of a worker's age on personnel decisions in jobs which are either stereotypically a younger person's job or stereotypically an older person's job. Two studies were conducted to examine the impact of age as a sign or a sample variable. In Study 1, managers from a large company were asked to evaluate hypothetical employees and make awards recommendations based on the past performance of the employee. In Study 2, managers evaluated the promotability of hypothetical employees. Thus, the awards decision was primarily concerned with rewarding past behavior, whereas, the promotion recommendation involved the prediction of future performance in specific occupations. Both studies were similarly designed, using a 3 (Job Stereotype) X 3 (Age) X 2 (Performance Pattern) analysis of variance design.

Defining Age as a Sign and a Sample Variable

The age of the hypothetical employee was operationalized in two ways: (1) the chronological age of the worker, and (2) the pattern of behaviors depicted in 10 performance ratings. Thus, there were two older employees (61 or 62 years), two middle-aged employees (40 or 41 years) and two younger employees (27 or 28 years).

The pattern of 10 performance ratings reflected either a stereotypically younger pattern of behaviors or an older pattern of behaviors. The 10 performance ratings were assigned by the experimenters using two

predetermined patterns of ratings. In the older performance pattern, five performance areas believed to be negatively influenced by the age stereotype were rated lower than the other five areas. These target areas included self-development skills, interpersonal skills, technical competence, problem-solving and attention to detail. In the younger performance pattern, these five dimensions were rated higher. Although there were two versions of the 10 ratings, the overall level of performance in the two patterns was equal; i.e., when the 10 ratings are summed, the total score is the same in both the younger and older patterns. These two independent variables, the chronological age of the employee and the performance pattern of ratings, were considered operationalizations of the sign approach to decision-making. Cleveland and Landy (1983) predicted significant main effects for both chronological age and the (age-related) pattern of performance in both the awards study and the promotion study.

The third independent variable in the Cleveland and Landy study was a contextual variable--the age stereotype of the job. There were three jobs that varied in age stereotype: (a) the job title of Plant Manager represented the stereotypically older job; (b) the younger job was Intermediate Programmer; and (c) Production Planner represented the age-neutral position. These jobs were classified by age stereotype in a previous study by Cleveland and Landy (1981). Although there were three possible two way interactions only two interactions in the studies represented the sample approach, the Job X Age interaction and the Job X Pattern interaction. Both of these interactions suggest that the age of

the employee (defined either in terms of chronological age or performance pattern) has an effect upon decisions only when the employee's age is inconsistent with the stereotype of the job.

Dependent Variables

Study 1 - Awards Study - Nineteen subjects were asked to distribute money among six hypothetical employees for each of the three age-typed jobs. The amount of award money that could be distributed to one "employee" ranged from no money to approximately four months salary. Each subject provided a total of 18 recommendations.

Study 2 - Promotion Study - Nineteen managers (they did not participate in Study 1) made promotion recommendations for each of six employees for the three jobs. One of the following was recommended for each of the hypothetical employees; (1) promote immediately (into the stereotype job); (2) promote within two years; (3) promote within two to four years; or (4) maintain the employee at the present level of employment. Again, each subject provided a total of 18 promotability ratings.

Overall Performance Rating - Prior to making an awards or a promotion recommendation, subjects in both studies rated the overall level of performance of each of the hypothetical employees. Managers were instructed to review the 10 specific ratings and then rate the employee on overall performance using a six-point scale. A rating of "1" represented a poor level of performance while a rating of "6" reflected an excellent level of performance. In both studies, managers provided 18 ratings of overall performance.

Results

Awards Study

In Table 1, the results of the separate analysis of variance using both the awards recommendation and the overall rating as the criterion are shown. There were no main effects involving any of the three independent variables. However, one of the interactions which represented the sample approach was significant. The significant Job X Pattern, presented in Figure 2, indicates that the largest difference in awards money between the younger and older patterns was found in the young job. Using the overall rating as the criterion, the Job X Pattern interaction, which is also shown in Figure 2, indicates that the largest difference in ratings occurred when the job stereotypes are imcompatible with the performance pattern.

Promotion Study

The analysis of variance and the omega squared values are reported in Table 2. Using the promotion rating, one main effect, performance pattern, which reflected the sign approach was significant. The result indicated that managers viewed the younger pattern of behavior as more promotable than the older pattern. However, using both the overall rating and the promotion recommendation, the Job X Pattern interaction was again significant suggesting that the sample approach may more accurately reflect the process underlying the decisions. The Job X Pattern interactions for the promotion and overall performance ratings are presented in Figure 3. The largest difference in promotion ratings occurred in the younger job. This finding is similar to the results in Study 1. In addition, the

interpretation of the interaction using the overall rating was similar to the interpretation in Study 1; the largest differences in overall ratings occurred when the stereotype of the job was incompatible with the stereotypic pattern of behaviors.

Discussion of Data

The two studies were similar in a number of respects. First, the age of the hypothetical employee (a sign) did not have a significant main effect upon personnel decisions in either study. There are at least two possible explanations for this finding. First, demand characteristics may have cued the managers to avoid using chronological age as a basis for their judgments. The managers were well aware of the issues and consequences of racial, sexual, and age discrimination. A second explanation might be that chronological age, a sign variable, does not in this instance influence personnel decisions. Rather, it may be that perceived correlates of age (variables that are part of the age stereotype, such as ability contructs) negatively influence decisions. The pattern of performance behaviors (10 areas) is one such operationalization of the age stereotype. Similar to chronological age, the pattern also represented a sign of a specific person-ability relationship. Although the main effect for performance pattern was significant in the promotion decision, it was not significant in the awards exercise. Therefore, the sign approach provides little information for understanding decision-making. Had this been a typical (sign-oriented) study of age bias in personnel decisions, Cleveland and Landy (1983) probably would have concluded that worker age has no effect upon decisions.

On the other hand, the sample approach in understanding the process of decision-making receives support in both the awards and the promotion studies. The interaction indicated that in the younger job, employees depicted by the older pattern of behaviors received less awards money and were promoted less quickly than employees depicted by the younger pattern. In addition, the Job X Pattern interaction using the overall performance rating as the criterion was significant in both studies. The interpretation of the interaction suggested that employees were rated lower in overall performance when they were depicted by the 10 behaviors as inconsistent with the job stereotype.

Summary and Recommendations

There are two different approaches for explaining the effects of personal characteristics upon personnel decisions: (a) the sign approach, which implies a direct link between person variables and decisions, and (b) the sample approach, which involves the consideration of both personal and situational characteristics. There are several advantages to considering both sign and sample approaches in research on personnel decisions biases. First, the consideration of both approaches directs researchers' attention to the frequently ignored question of how personal characteristics of employees affect the supervisor's decisions. The sign approach suggests that we should study the supervisor's beliefs about the relationships between traits and behaviors (as in Implicit Personality Theory research); whereas, the sample approach suggests that the relationship beteween traits and behaviors is not context-free and that we should study the situation

and the supervisor's perception of the situation. Second, the consideration of both approaches significantly broadens the scope of research in this area. Researchers need not limit themselves to the small set of person characteristics which have been studied in existing sign-oriented research, but rather can study a variety of person-situation interactions. Third, it is important to consider both personal and contextual characteristics in order to develop a more sophisticated understanding of bias in the workplace. Bias is only rarely an all-or-none phenomenon; situational factors may either accentuate or suppress the biasing effects of personal characteristics upon personnel decisions.

The sample approach suggests that we need sound theories of "the situation". This has been an important concern in research on personality, but has not been adequately addressed in personnel research. For example, we do not know why supervisors view particular personal characteristics as either consistent or inconsistent with the job. It is possible that supervisors are primarily affected by the actual distribution of males, females, young persons, older persons, etc.; their theories of the job may be grounded in reality. Another possibility is that supervisors' perceptions of the job are the product of stereotypes and implicit theories; supervisors may view females as not fitting into a stereotypically male job, even in the face of many instances of successful female performance.

The sample approach suggests three areas for future research. First, as noted above, research on supervisors' theories of the job should be given high priority. Second, research is needed on the parameters of the

lack of fit model. It seems likely that some personal characteristics have a stronger effect upon decisions in a wide variety of contexts than others. It also seems likely that some personal characteristics would not greatly affect decisions under any circumstances. At present, we know little about the limits of the lack of fit model. Third, research is needed on methods of broadening supervisors' theory of the job. A supervisor with a very narrow conception of the typical worker may exhibit bias against a wide variety of workers who do not "fit". It is possible that we can most effectively combat unfair bias in decisions by broadening supervisors' theories of the job. Incorporating the sign and sample approaches within our research designs may lead to further understanding of personnel decision-making.

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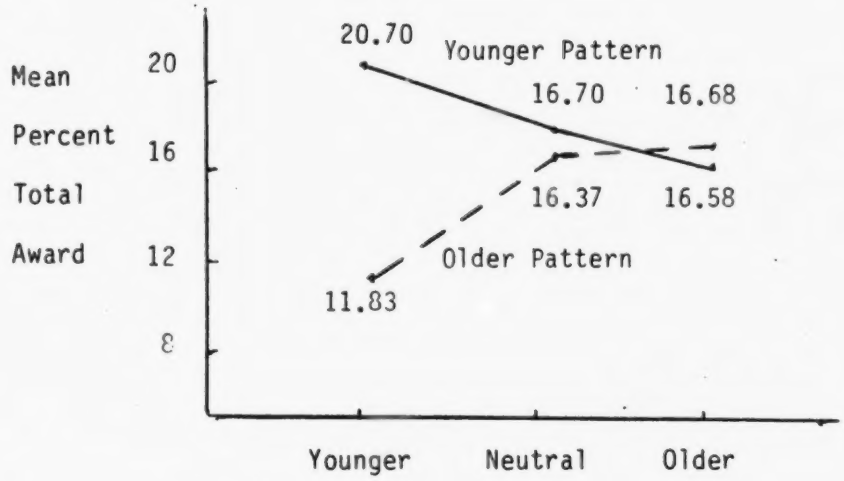
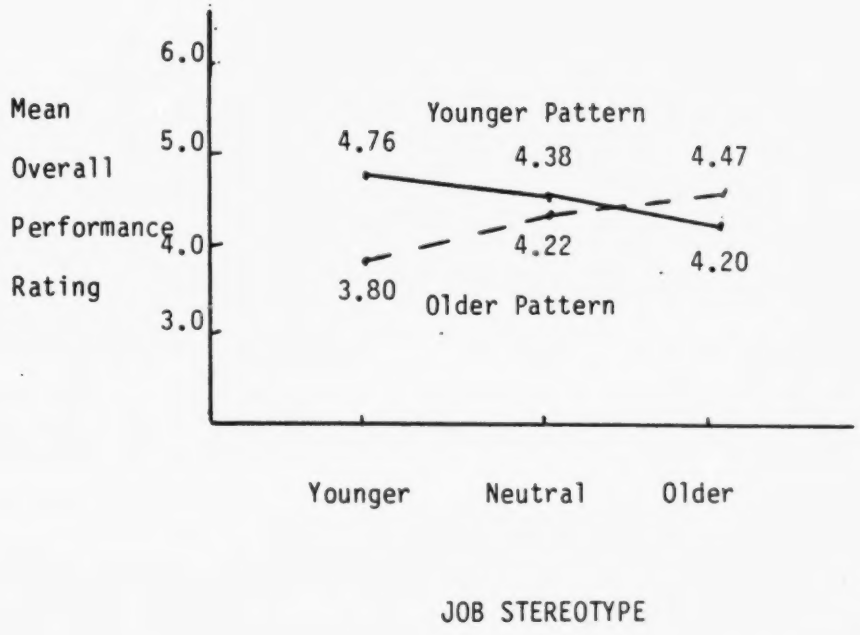
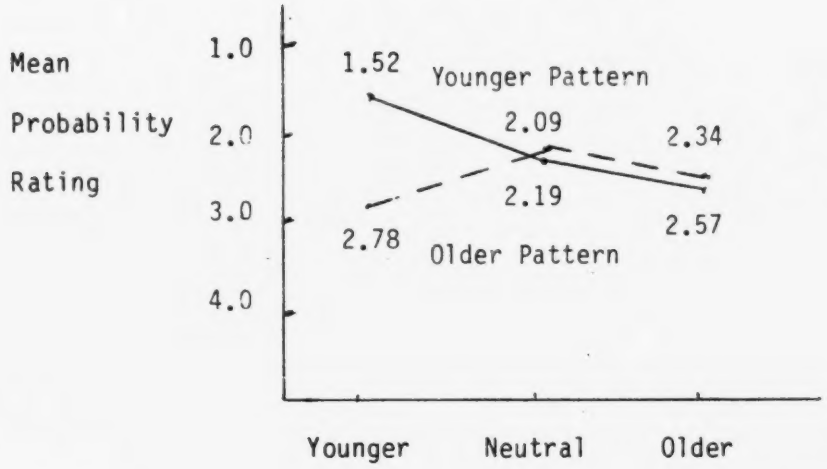


(a)

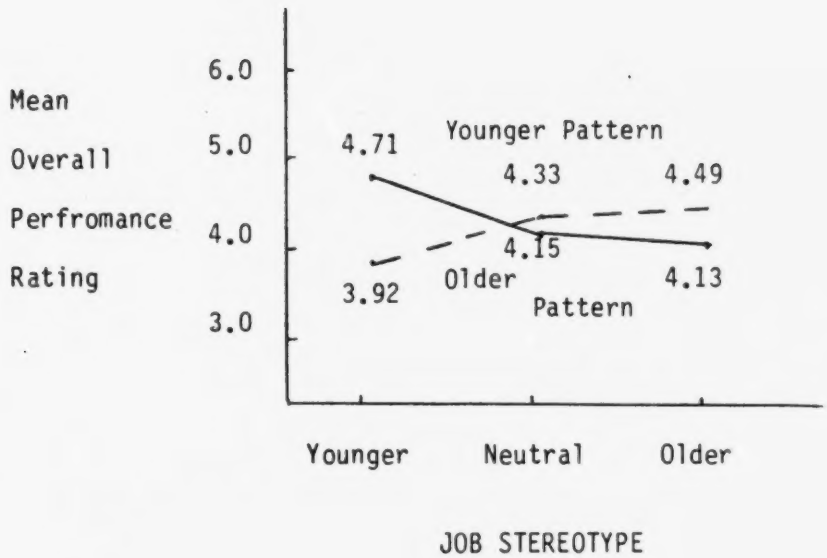


(b)

Figure 2 - Awards Recommendation-The Job X Performanc Pattern Interaction Using the Percentage of Award (a) and the Overall Rating (b) as the Criteria



(a)



(b)

Figure 3. Promotion Decision--The Job X Performance Pattern Interaction Using the Promotability Rating (a) and the Overall Rating (b) as the Criteria

Table 1

ANOVA Results for Study 1: Percentage of Total Awards and Overall Performance Rating

Source of Variation	df		MS		F-Value[a]		Omega[2]	
	%Total Award[b]	Overall Rating[b]	%Total Award[b]	Overall Rating[b]	%Total Award[b]	Overall Rating[b]	%Total Award[b]	Overall Rating[b]
Mean	1	1	92845.69	5000.90	29131.40**	2046.71**	-	-
Error	18	144	3.19	2.44				
Job Stereotype	2	2	4.16	0.70	2.21	0.13	-	-
Error	36	28	1.88	0.54				
Target Age	2	2	20.65	0.10	1.02	1.44	-	-
Error	36	28	20.30	0.07				
Performance Pattern	1	1	787.61	5.35	3.97	2.53	-	-
Error	18	14	198.33	2.11				
Job X Target Age	4	4	18.76	0.04	0.95	0.33	-	-
Error	74	56	19.82	0.11				

Table 1 (cont.)

Job X Pattern	2	2	730.90	8.67	7.81**	6.26**	.30	.50
Error	36	28	93.53	1.38				
Target Age X Pattern	2	2	185.08	0.77	9.58**	6.04**	.06	.04
Error	36	28	19.32	0.13				
Job X Age X Pattern	4	4	5.90	0.03	0.22	0.71	-	-
Error	74	56	26.44	0.16				

---

[a]Probability reported based on Greenhouse-Grisser probability (corrections for symmetry violations).

**p .001

[b]The sample sizes using the precentage of total award andthe overall rating as the criteria were 19 and 15, respectively.

Table 2

ANOVA Results for Study 2: Promotion Rating and Overall Performance Rating

Source of Variation	df		MS		F-Value[a]		Omega[2]	
	Promo Rating[b]	Overall Rating[b]	Promo Rating[b]	Overall Rating[b]	Promo Rating[b]	Overall Rating[b]	Promo Rating[b]	Overall Rating[b]
Error	17	12	2.70	1.56				
Job Stereotype	2	2	3.47	0.13	5.26**	0.53	.03	-
Error	34	24	0.66	0.25				
Target Age	2	2	2.50	0.13	2.63	0.25	.02	-
Error	34	24	0.95	0.53				
Performance Pattern	11	1	7.71	0.43	5.98**	0.03	.02	-
Error	17	121	1.29	1.43				
Job X Target Age	4	4	0.70	0.02	0.90	0.18	-	-
Error	68	48	0.77	0.13				
Job X Pattern	2	2	18.45	7.72	18.95**	16.79**	.34	.72
Error	34	24	0.97	0.45				

Table 2 (cont.)

Target Age X Pattern	2	2	0.39	0.03	1.69	0.24		
Error	34	24	0.23	0.13				
Job X Age X Pattern	4	4	0.11	0.18	0.19	1.76	-	-
Error	68	48	0.58	0.10				

[a]Probability reproted based on Greenhouse-Geisser probability (corrections for symmetry violations).

** p .001

[b]The sample sizes using the promotion rating and the overall rating as the criteria were 18 and 13, respectively.

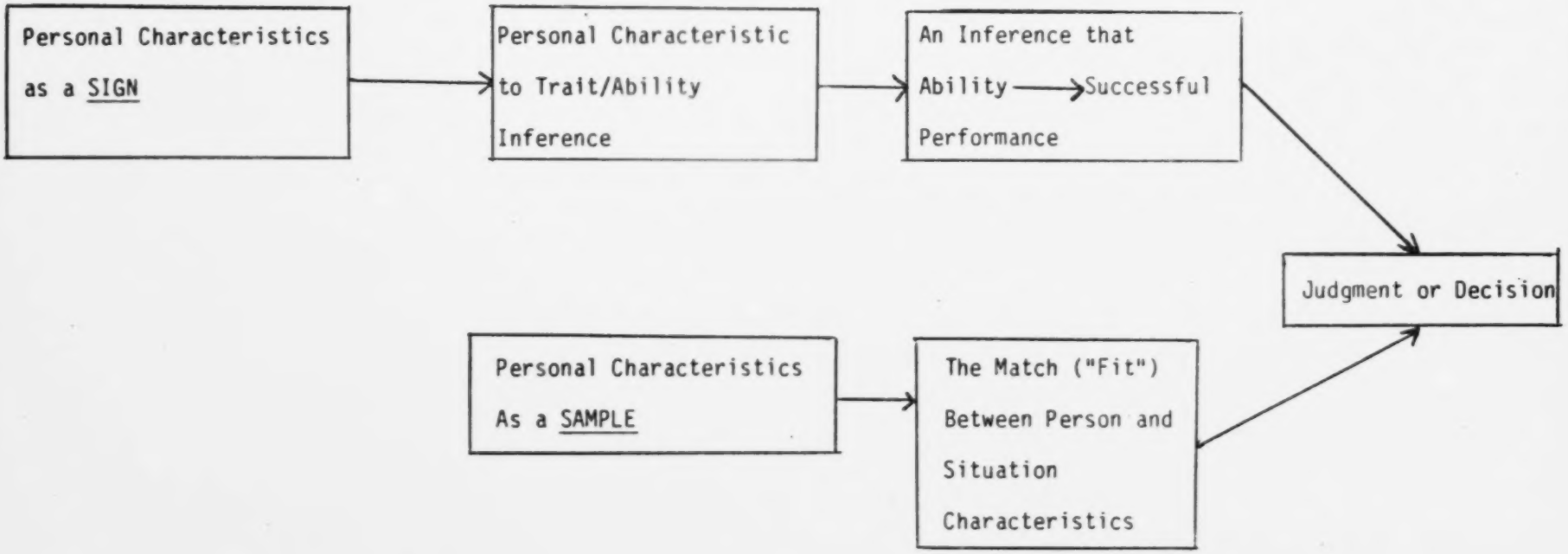

Personal Characteristics as a SIGN
Personal Characteristic to Trait/Ability Inference
An Inference that Ability → Successful Performance
Judgment or Decision
Personal Characteristics As a SAMPLE
The Match ("Fit") Between Person and Situation Characteristics

Figure 1. A model depicti ng the Inference Made in Viewing Personal Characteristics as a Sign or a Sample of Performance